

DIAPHRAGM VACUUM PUMPS WITH KNF STABILIZATION SYSTEM

DATA SHEET E 015



N 920 APE-W in side position. Automatically to global voltage condition (As an option with external signal input).



N 920 APDCB with brushless DC motor (As an option with external signal input).

Concept

The powerful diaphragm vacuum pumps N 920 are especially well suited for all applications requiring excellent suction speed at low absolute pressures. A series of technical innovations, including a diaphragm stabilization system, allows the high suction especially in the low-vacuum range.

The vacuum pumps N 920 are available with optional adjustable flow rates; in this case, either an integrated potentiometer or an external activator with an analog signal input will alter the motor speed. These pump versions make it possible to adapt the flow rate to the requirements of a specific process, for example.

Features

Transfer, evacuation and compression of air, gases and vapours

No contamination of the media due to oil-free operation

KNF stabilization system

Optimized suction speed, also for low absolute pressures

High level of gas tightness:

approx. 6×10^{-3} mbar x l/s (not tested in serial production)

Quiet running

Cool and efficient brushless motor

Multi-voltage power supply input

Manifold block head eliminates external connections

Can operate in any installed position

Areas of use

The N 920 series of diaphragm vacuum pumps offer a high level of performance in a compact unit size. Typical applications are in the fields of analysis, chemistry, medicine and production technologies.

The N 920 pumps also support turbomolecular systems as roughing pumps.

There are many applications for the N 920 series, please contact KNF for application advice.

PERFORMANCE DATA

Type	Delivery (l/min)	Vacuum (mbar absolute)	atm. Press.	Pressure (bar g)	Weight (kg)
N 920 APE-W	21	1.5		0.5	10.0
N 920 APDCB	21	1.5		0.5	8.5

N 920 APE-W

PERFORMANCE DATA

Type and Order No.	Delivery (l/min) ¹⁾ at atm. pressure	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 920 APE-W	21	0.5	< 1.5

¹⁾ Litre at STP

MODEL CODES AND MATERIALS

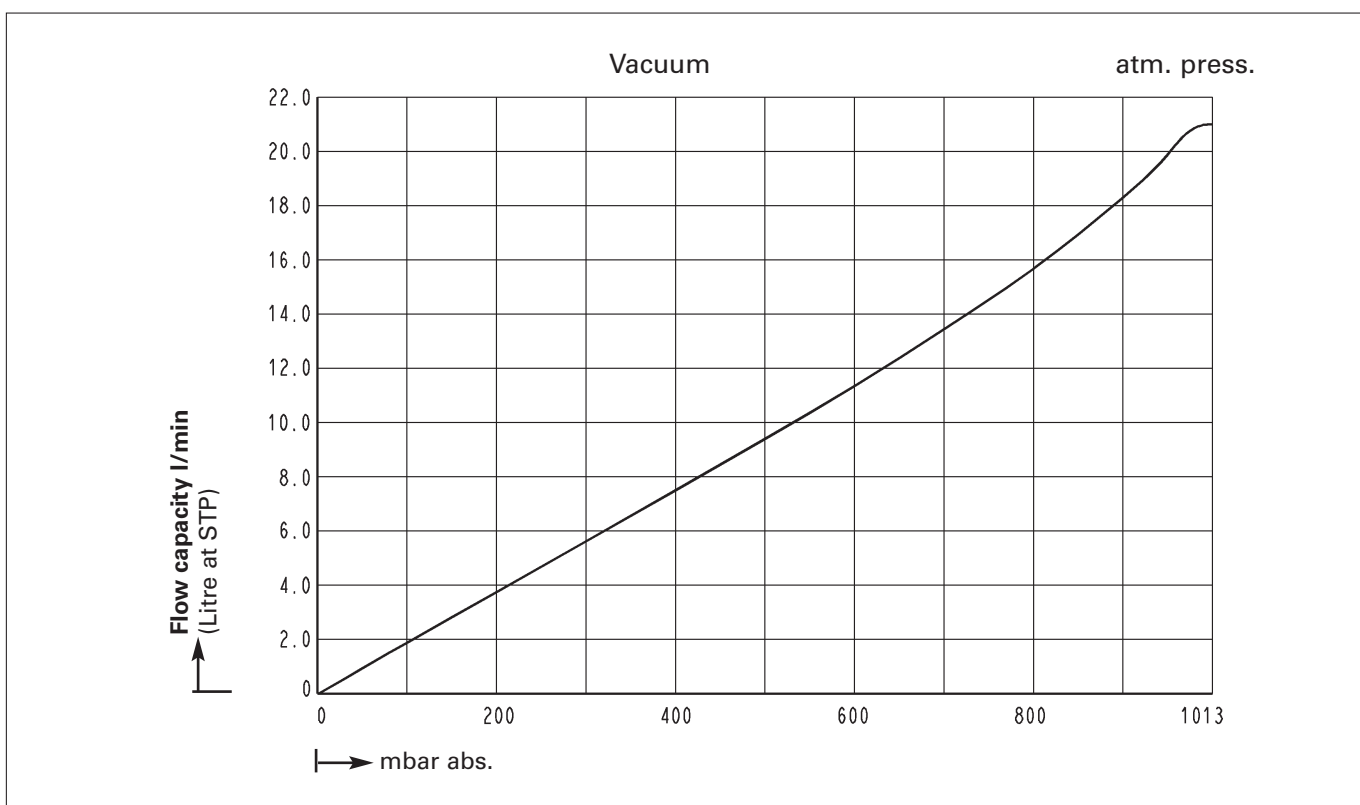
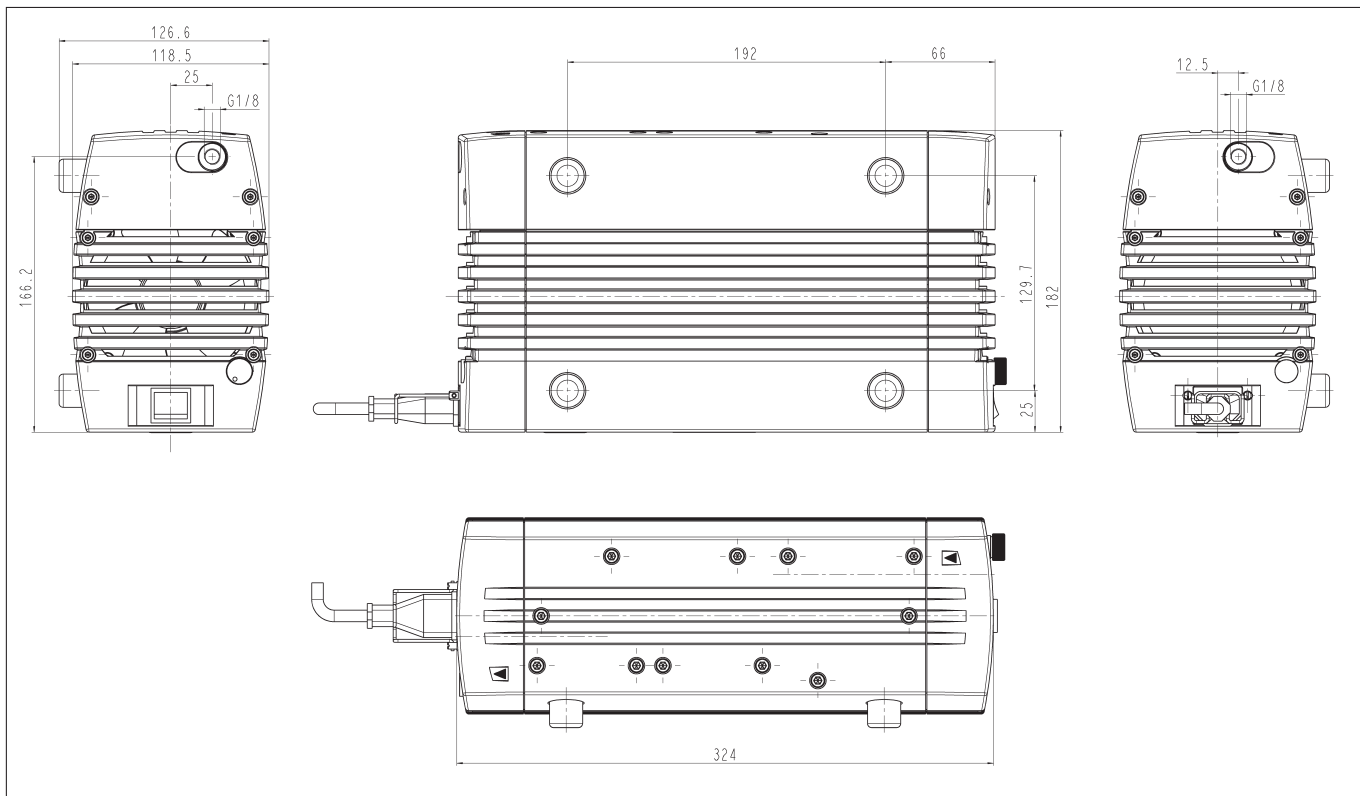
Type and Order No.	Pump head	Diaphragm	Valves
N 920 APE-W	Aluminium	EPDM	EPDM

The delivery of the N 920 series pumps can be adjusted with an optional potentiometer or by external analog signal. Please contact us for further information.

MOTOR DATA

Motor type: brushless DC motor with AC power supply		
Protection class	IP 20	
Voltage/Frequencies (V/Hz)	~100-240/50-60	
Power P ₁ (W)	120	
Operating current (A)	1.3	

Dimensions mm (All dimensional tolerances conform to DIN ISO 2768-1, Tolerance Class V)



N 920 APDC B

PERFORMANCE DATA

Type and Order No.	Delivery (l/min) ¹⁾ at atm. pressure	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 920 APDC B	21	0.5	< 1.5

¹⁾ Litre at STP

MODEL CODES AND MATERIALS

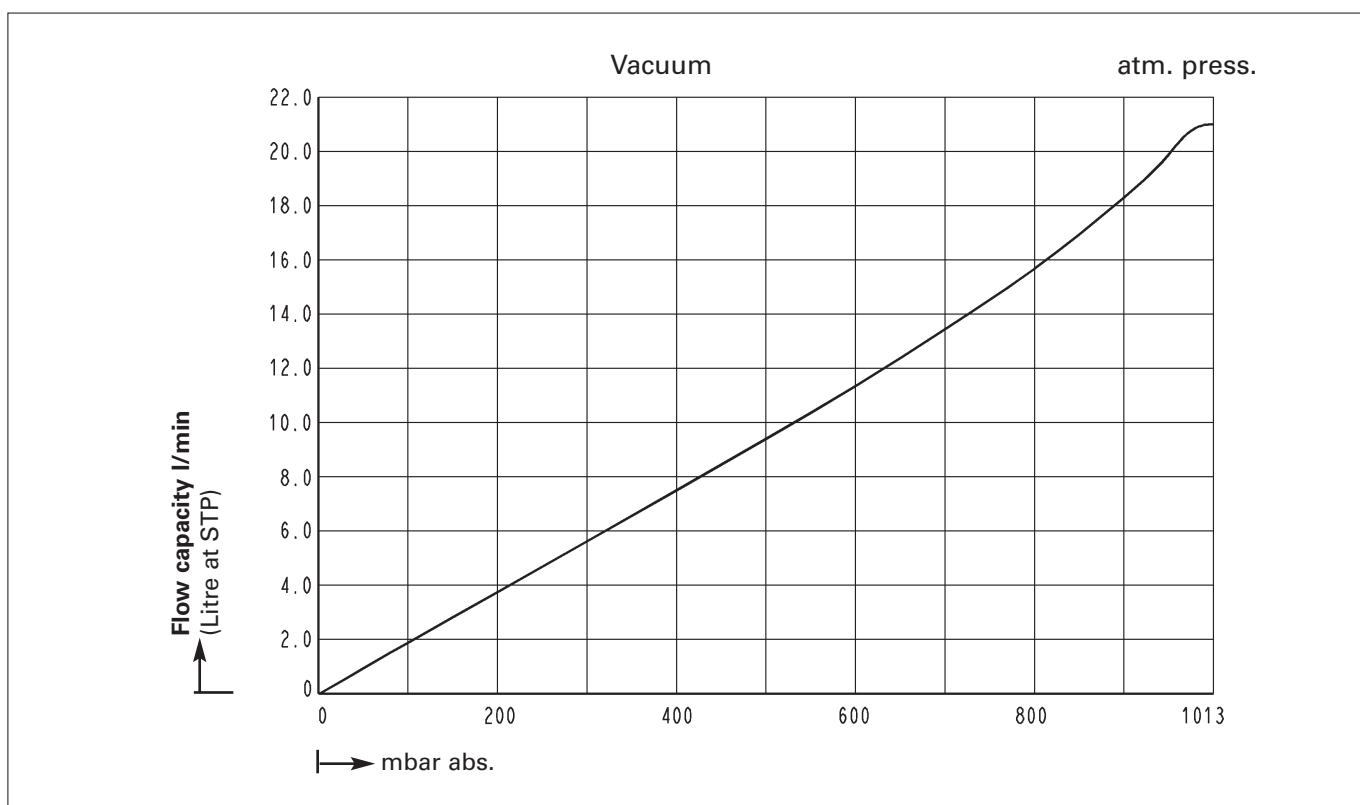
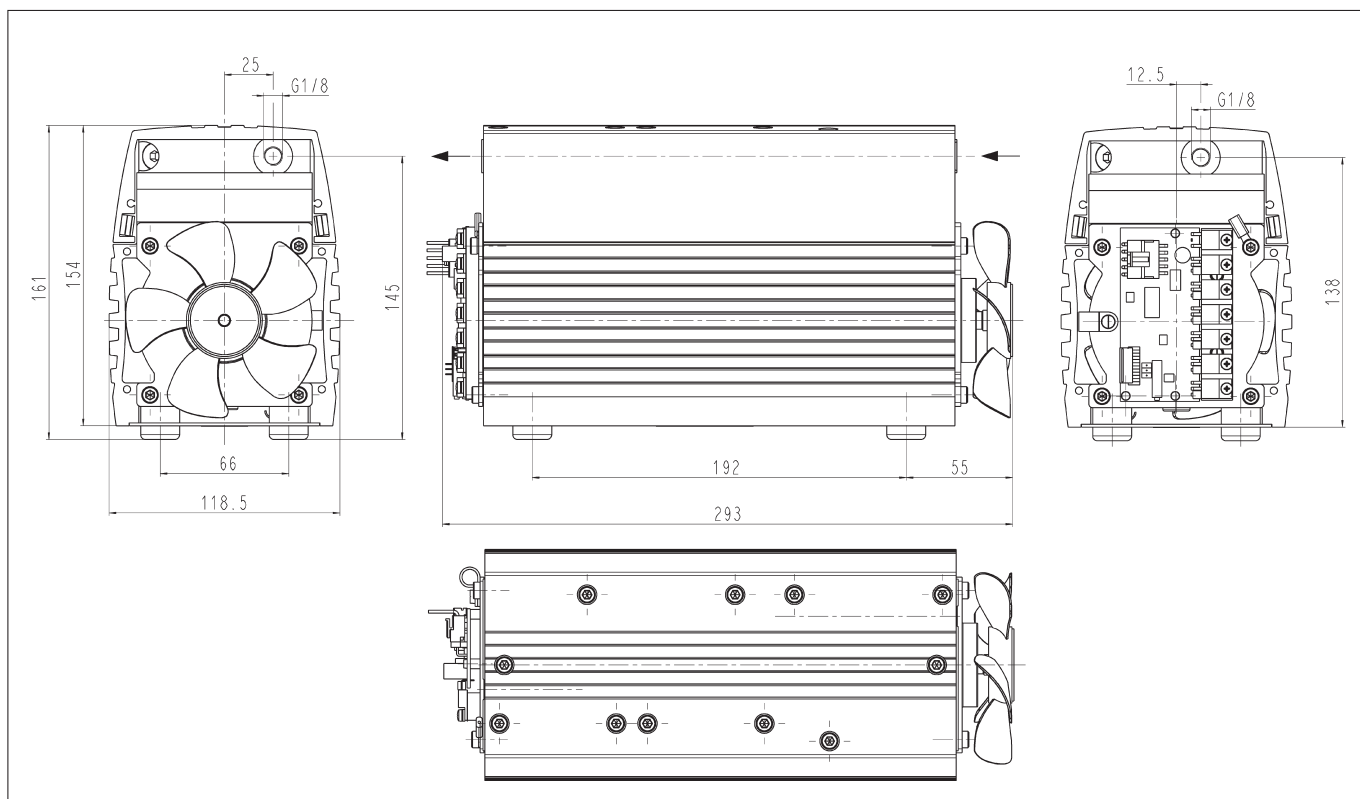
Type and Order No.	Pump head	Diaphragm	Valves
N 920 APDC B	Aluminium	EPDM	EPDM

The delivery of the N 920 series pumps can be adjust by external analog signal. Please contact us for further information.

MOTOR DATA

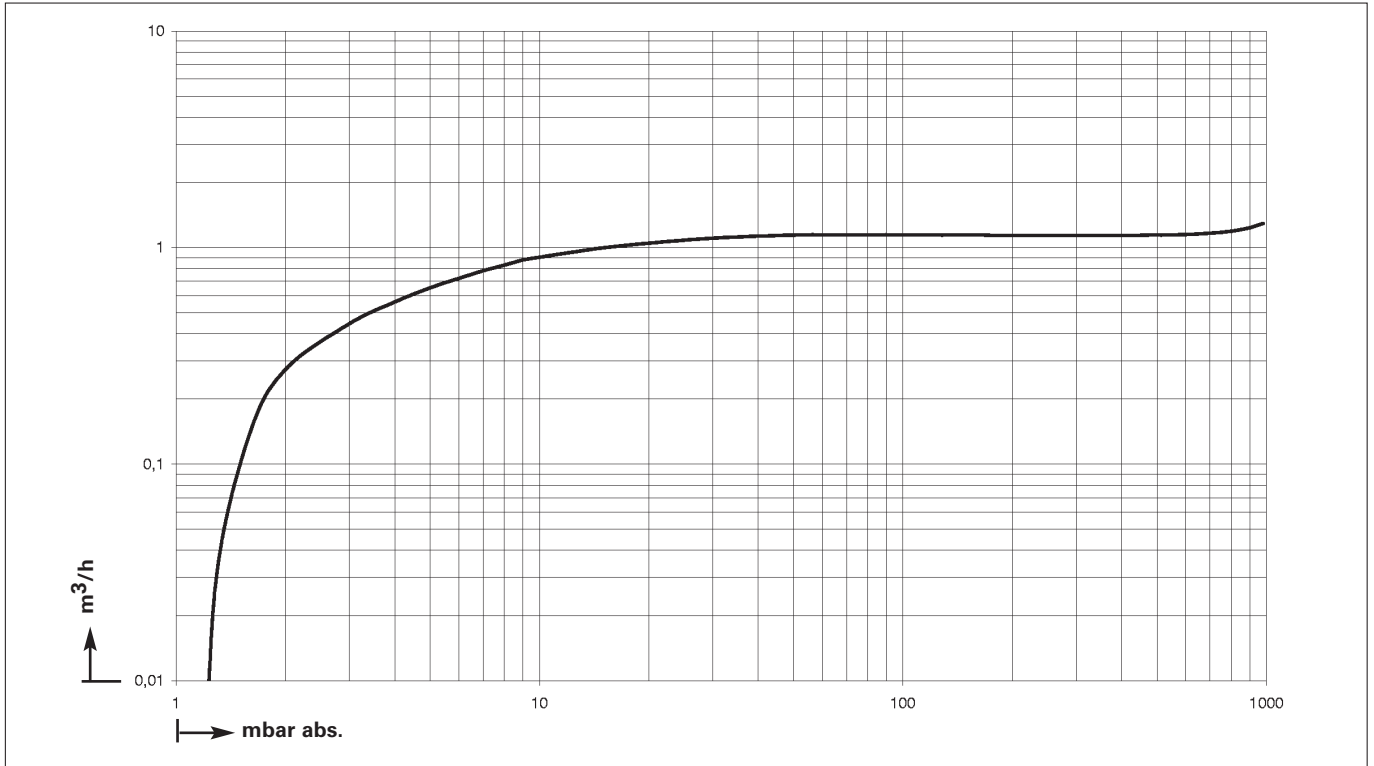
Motor type: brushless DC motor	
Protection class	IP 00
Voltage (V)	24
Power P ₁ (W)	100
Operating current (A)	4.2 (starting current, moment ary 200 ms: 7 A)

Dimensions mm (All dimensional tolerances conform to DIN ISO 2768-1, Tolerance Class V)

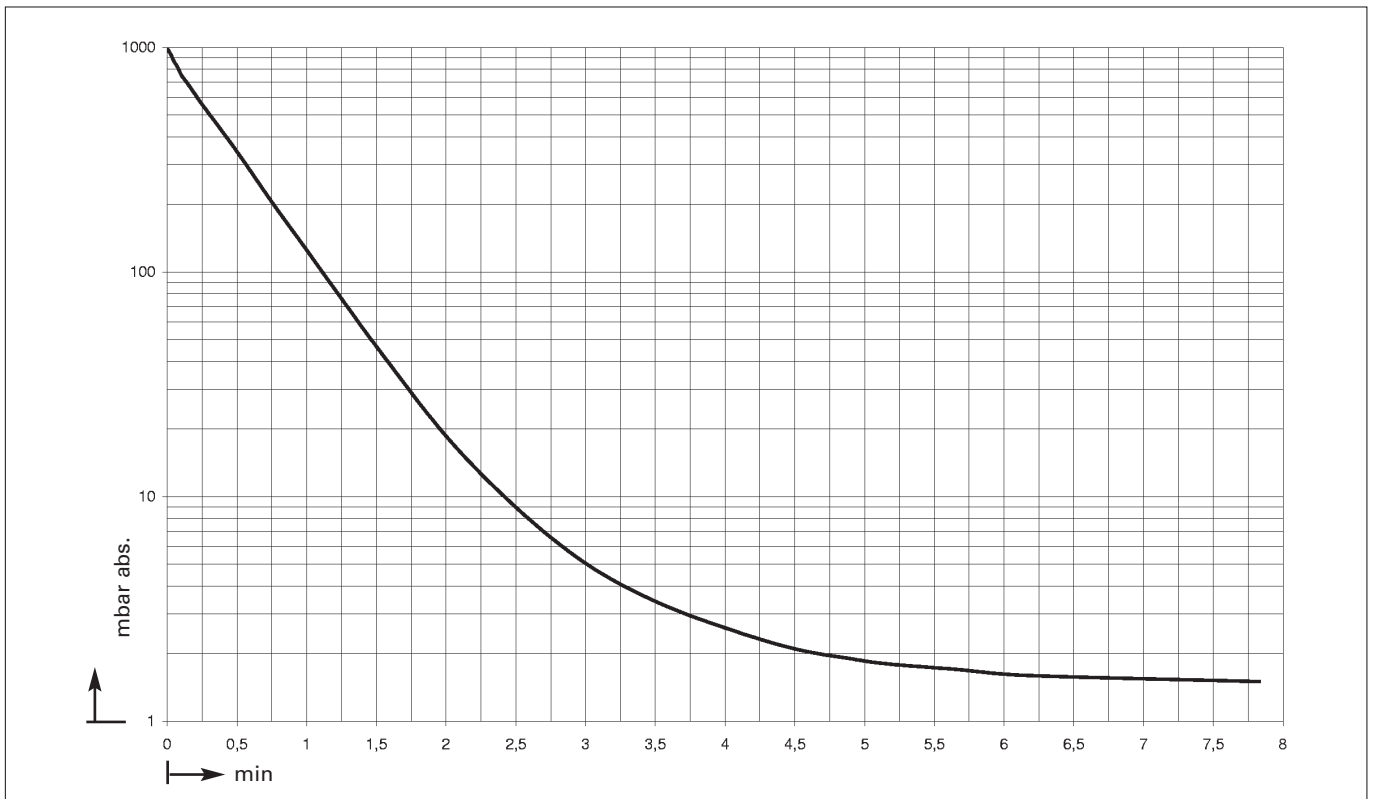


PERFORMANCE DATA

Suction pumping speed



Pump down time for 10 litre receiver

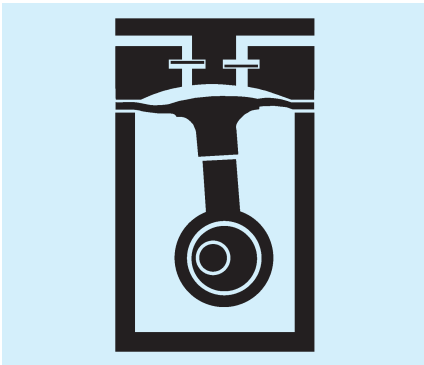


HINTS ON FUNCTION, INSTALLATION AND SERVICE

THE BASIC FUNCTION OF KNF DIAPHRAGM VACUUM PUMPS AND COMPRESSORS

An elastic diaphragm is moved up and down by an eccentric (see illustration). On the down-stroke it draws the air or gas being handled through the inlet valve. On the up-stroke the diaphragm forces the medium through the exhaust valve and out of the head. The compression chamber is hermetically separated from the drive mechanism by the diaphragm. The pumps transfer, evacuate and compress completely oil-free.

Diaphragm pump



Diaphragm stabilization system

An additional diaphragm, the so-called stabilization diaphragm, separates the underside of the working diaphragm from the "crank" space of the pump (see Fig. 2). The space between the two diaphragms (called a vacuum chamber) is connected with the suction side of the pump via an balancing connection.

HINTS ON INSTALLATION AND OPERATION

- Range of use: Transferring air and gases at temperatures between +5°C and +40°C
- Permissible ambient temperature: between +10°C and +40°C
- Please check the compatibility of the materials of the pump head, diaphragm and valves with the medium
- The KNF product line contains pumps suitable for pumping aggressive gases and vapors - please contact us
- Standard pumps are not suitable for use in areas where there is a risk of explosion. In these cases there are other products in the KNF program - please ask us for details
- To prevent the maximum operating pressure being exceeded, restriction or regulation of the air flow should only be carried out in the suction line
- Components connected to the pump must be designed to withstand the pneumatic performance of the pump

- Install the pump so that the fan can draw in sufficient cooling air
- Fit the pump at the highest point in the system, so that condensate cannot collect in the head of the pump.

HINTS ON SERVICE

The diaphragm and valves are the only parts of the KNF diaphragm pumps subject to wear. They are easy to change, as no special tools are needed.

If you have any questions, please call our application engineers (see below for contact telephone number).

This way, the vacuum chamber has approximately the same pressure as the working space of the diaphragm pump. The pressure difference between the upper and underside of the diaphragm approaches zero. The working diaphragm remains stable, independent of the inlet pressure of the

pump. This improves the suction speed of the pump significantly, over its entire working range.

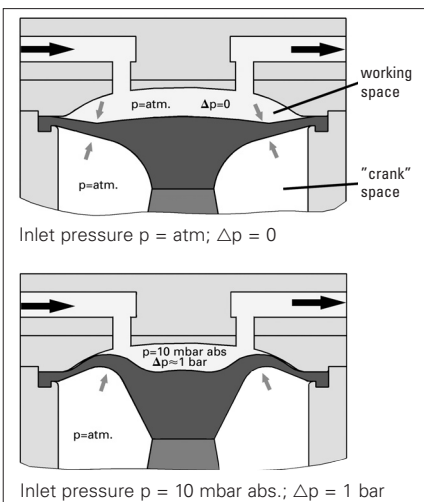


Fig. 1: Diaphragm behavior, due to the pressure difference between working space and "crank" space (normal diaphragm pump)

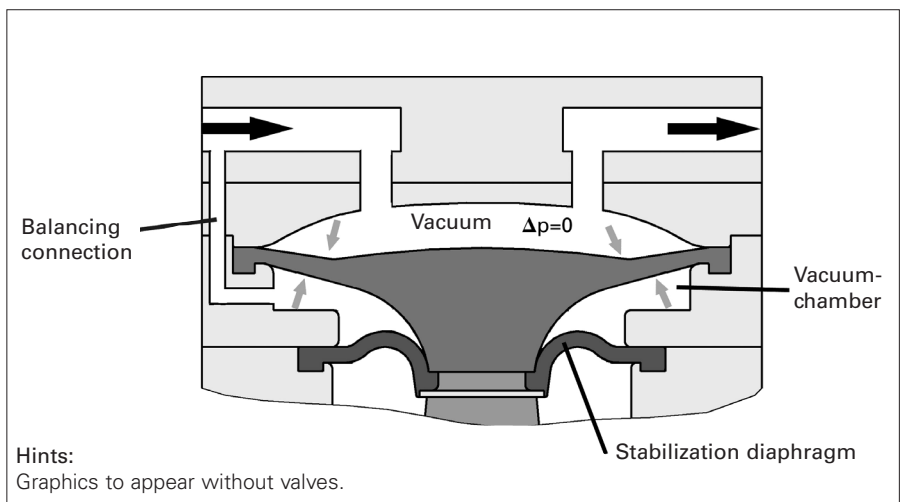


Fig. 2: Diaphragm stabilization system with additional diaphragm. This improves the suction speed of the pump significantly, over its entire working range.

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